MIDI Wind Instrument

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TOOLS:

- Drill (1)
- Keyboard (1)
- Multi-Meter (1)
- Soldering iron (1)
- Wire cutter/stripper (1)

PARTS:

- Arduino Uno (1)
- Breadboard (1)
- MIDI keyboard (1)
- MIDI Cable (1)
- Acrylic Sheet (Approx. 12"x1.5"x.125") (1)
- Pushbutton (6)
- Force Sensor (1)
- Jumper wires (1)
- Wire ~ 12' (1)
- resistor 220 ohm (1)
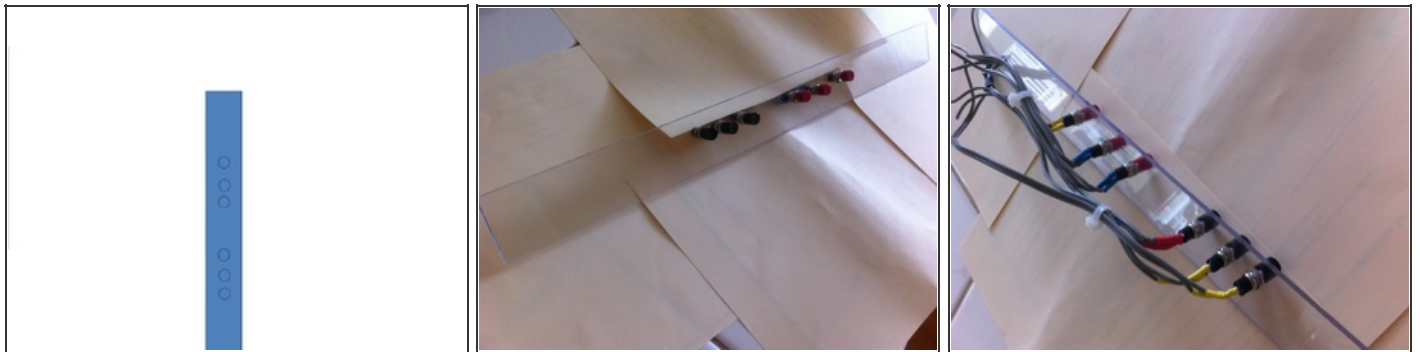- Heat Shrink (1)
- Resistors, 10K Ohm (R3, R10) (7)

SUMMARY

This is a six-button model of a wind instrument with a force sensor, powered by an Arduino, that can detect combinations of keys and play notes through a MIDI device such as a keyboard. This means that you will be able to play more notes with minimum finger combinations compared to a normal wind instrument.

The instrument will send a different MIDI signal for each note depending on the combination of buttons and whether the pressure sensor is activated. It can imitate different instruments

depdending on the code, so it can be either a saxophone, a clarinet, a trumpet, piano, etc.

Code can be found [here](#) on Google Docs.

Step 1 — Prepare the acrylic frame

- Drill 6 holes in piece of acrylic.

- Install 6 pushbuttons into holes.

- Solder wires onto each terminal and cover with heatshrink as seen in picture.

- Install force sensor onto the end of the frame using super glue, at a place where it is comfortable to put your mouth.

Step 2 — Prepare MIDI connector to MIDI output device
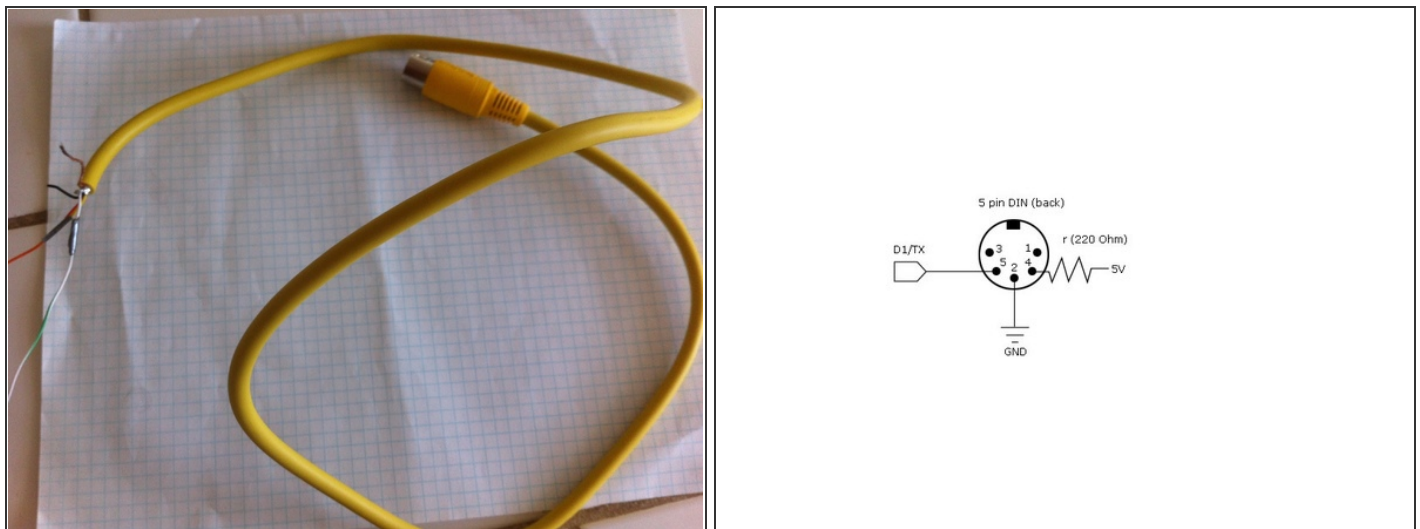

- Cut connector off of the end of the MIDI cable and strip back the protective cover.

- Determine wires for pins 2, 4, and 5 using a multimeter.

- Solder terminals 2, 4, and 5 to jumper wires.

## Step 3 — Test the MIDI connector to MIDI output device
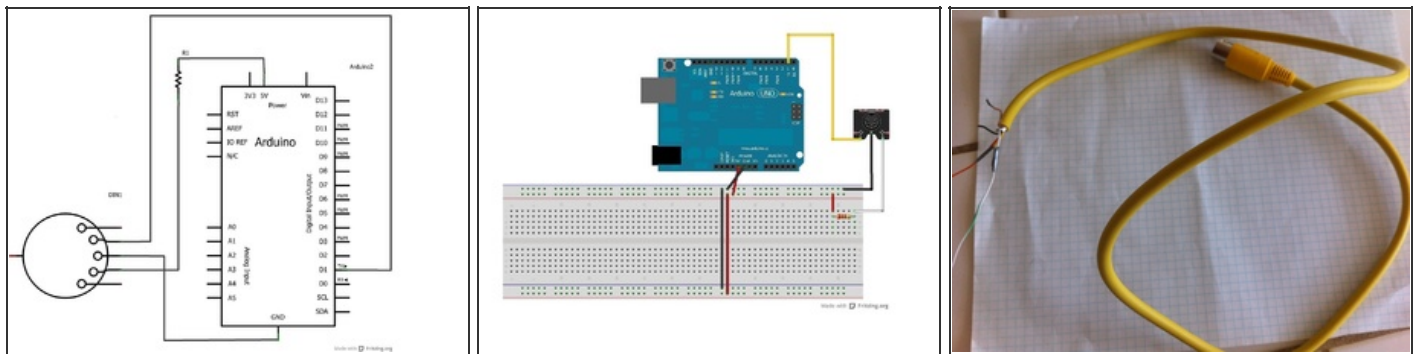
- Wire it into the breadboard as seen in diagrams.
- Test with program to ensure that Arduino is communicating with MIDI device (can be found in Google Docs).
  - Should play a chromatic scale.

Step 4 — Wiring
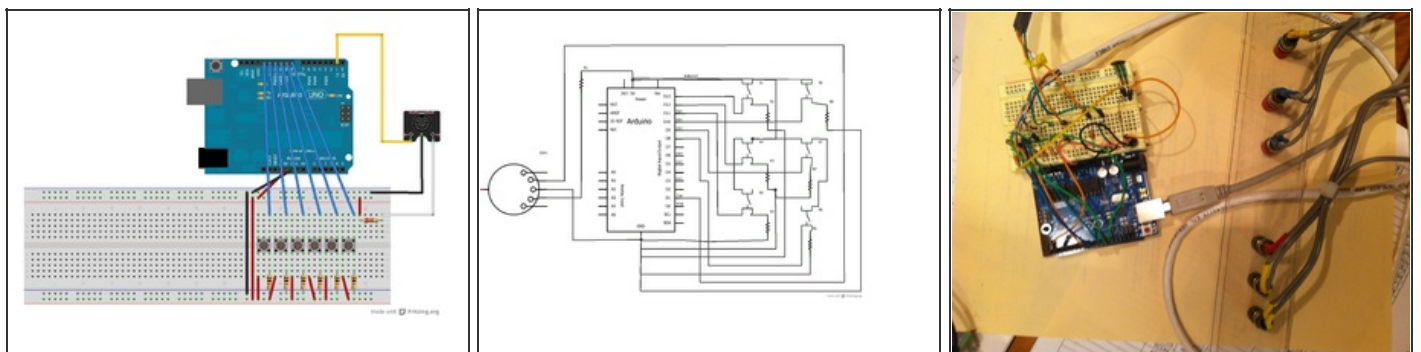
- Wire in instrument using a breadboard and jumper cable (see diagram).
- Program it to work with buttons (see Google Docs for code).
  - Only the first three buttons will function at this point.

Step 5 — Force Sensor
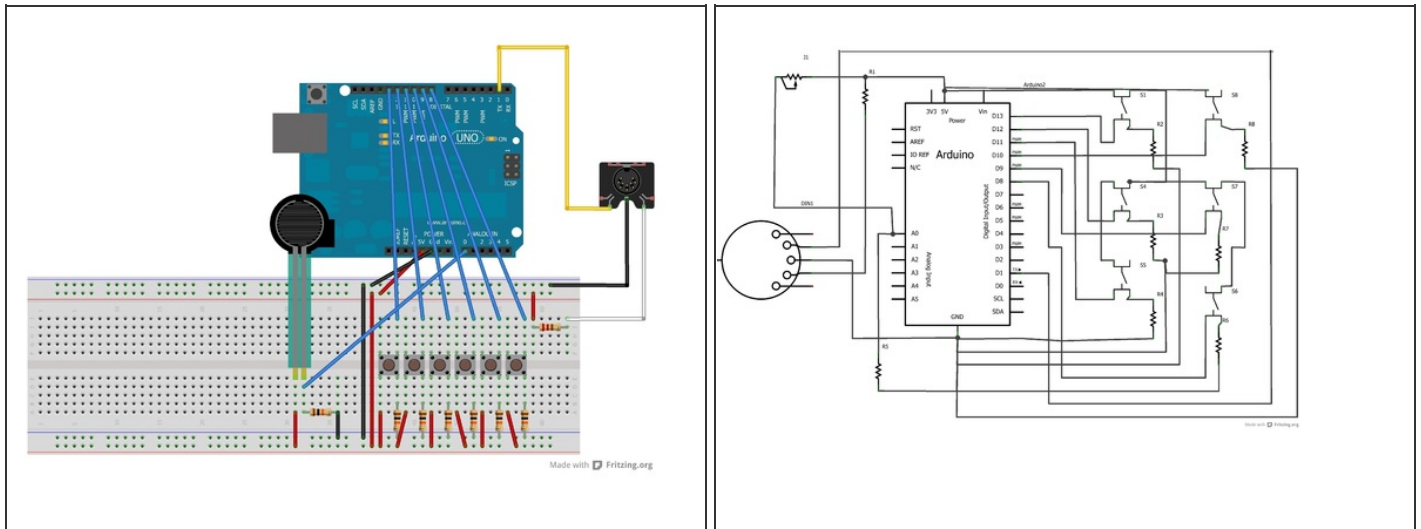
- Wire in Force Sensor according to diagram.
- Program force senor (can be found on Google Docs).
  - You can now change the volume depending on how hard you press.

After completing this project, you will have a MIDI saxophone. To change the type of instrument, press button six.

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